TABLE 1-continued

	FWHM (nm)
Comparative Example 2	140 nm

Referring to FIG. **8** and Table 1, the organic photoelectronic device of Example 1 shows external quantum efficiency (EQE) having a narrower full width at half maximum (FWHM) in the wavelength region of about 500 nm to 600 nm than those of the organic photoelectronic devices according to Comparative Examples 1 and 2. Accordingly, the organic photoelectronic device of Example 1 shows higher wavelength selectivity regarding a green wavelength region than that of the organic photoelectronic devices according to Comparative Examples 1 and 2.

Evaluation 2

The external quantum efficiency (EQE) of the organic photoelectronic devices according to Examples 2 and 3 is calculated according to the same method as Evaluation 1. Subsequently, the external quantum efficiency (EQE) of the organic photoelectronic devices of Examples 1 to 3 obtained according to the Evaluation 1 is normalized.

The results are provided in FIG. **9**.

FIG. **9** is a graph showing the normalized external quantum efficiency (EQE) of the organic photoelectronic devices according to Examples 1 to 3 depending on a wavelength.

Referring to FIG. **9**, the organic photoelectronic devices according to Examples 2 and 3 show a maximum peak of external quantum efficiency (EQE) in a green wavelength region of about 500 nm to 600 nm, like the organic photoelectronic device according to Example 1.

Evaluation 3

The crosstalk of an image sensor respectively applying the organic photoelectronic devices according to Example 1 and Comparative Examples 1 and 2 and having a structure shown in FIG. **4** is evaluated.

The crosstalk evaluation is simulated by using a LUMERRICAL (3D) program. Herein, how much the organic photoelectronic devices are optically interfered with is evaluated by dividing a wavelength region into three regions of 440-480 nm (blue), 520-560 nm (green), and 590-630 nm (red). In other words, a relative integral value of sensitivity curves of red and green devices in the 440-480 nm region is obtained by regarding an integral value of the sensitivity curve of a blue device in the 440-480 nm region as 100. The relative integral value is crosstalk of the red and green devices regarding a blue region in the 440-480 nm region. Likewise, a relative integral value of sensitivity curves of red and blue devices in the 520-560 nm region is obtained by regarding an integral value of the sensitivity curve of a green device in the 520-560 nm region as 100. The relative integral value is crosstalk of the red and blue devices about a green region in the 520-560 nm region. Likewise, a relative integral value of sensitivity curves of green and blue devices in the 590-630 nm region is obtained by regarding an integral value of the sensitivity curve of a red device in the 590-630 nm region as 100. The relative integral value is a crosstalk of the green and blue devices about a red region in the 590-630 nm region. Lastly, the crosstalk values are averaged to obtain average crosstalk.

The results are provided in FIG. **10** and Table 2.

FIG. **10** shows quantum efficiency (QE) in the red, green, and blue device regions of the image sensor manufactured by applying the organic photoelectronic device of Example 1, and FIGS. **11** and **12** show quantum efficiency (QE) in the red, green, and blue device regions of each image sensor manufactured by respectively applying the organic photoelectronic devices of Comparative Examples 1 and 2.

TABLE 2

	Average crosstalk (%)
Example 1	17.2
Comparative Example 1	33
Comparative Example 2	19.6

Referring to FIGS. **10** to **12** and Table 2, the image sensor manufactured by applying the organic photoelectronic device of Example 1 shows decreased crosstalk compared with the image sensors manufactured by respectively applying the organic photoelectronic devices of Comparative Examples 1 and 2.

While this disclosure has been described in connection with what is presently considered to be practical example embodiments, it is to be understood that the inventive concepts are not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

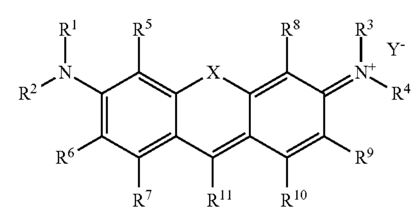
What is claimed is:

1. An organic photoelectronic device, comprising:

a first electrode and a second electrode facing each other; and

an active layer between the first electrode and the second electrode, the active layer including a heterojunction of a p-type semiconductor and an n-type semiconductor, the p-type semiconductor including a compound represented by the following Chemical Formula 1, and the n-type semiconductor including a compound represented by the following Chemical Formula 2:

[Chemical Formula 1]



wherein, in the Chemical Formula 1,

X is one of oxygen (—O—) and sulfur (—S—),

each of R^1 to R^{11} are independently one of hydrogen, a substituted or unsubstituted C_1 to C_{30} alkyl group, a substituted or unsubstituted C_1 to C_{30} alkoxy group, a substituted or unsubstituted C_6 to C_{30} aryl group, a substituted or unsubstituted C_3 to C_{30} heteroaryl group, and a combination thereof, and

Y^- is a halogen ion;